HELPING TO CONTROL FLOODS AT THEIR SOURCE--I

A radio discussion among F. A. Silcox, Chief, Forest Service, H. H. Bennett, Chief, Soil Conservation Service, and Milton S. Eisenhower, Director of Information, broadcast Tuesday, February 9, 1937, in the Department of Agriculture period of the National Farm and Home Hour by the National Broadcasting Company and a network of 57 associated radio stations.

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SALISBURY:

The floods roll on, and the pressing problem continues to be the relief of distress, and the prevention of disease. But the thoughts of our people already are turning to ways and means of lessening the chance of such disasters occurring again. Today we have with us two authorities on the use of land to help in flood control -- F. A. Silcox, chief of the Forest Service, and Hugh H. Bennett, chief of the Soil Conservation Service. They will discuss this very important question with Milton Eisenhower, director of Information. All three are well known to Farm and Home Hour listeners. So we'll just ask you, Milton, to proceed with the discussion.

EISENHOWER:

Very well, Morse. Thank you. As you've said, everyone has been giving first attention to relieving distress. That's still the immediate job. But we can spare a few moments, I think, to inquire if something can't be done to keep such distress from stalking the great river valleys in future years. I think a good question to start for our inquiry would be: Haven't we always had floods? How about it, Mr. Silcox?

SILCOX:

Yes, Milton, we have always had floods, but we have not always had floods so violent nor so destructive as this one. The really great floods have come since we have settled the country and man has disturbed nature's delicate balance. For example, take the Ohio River drainage basin. In Daniel Boone's time, 98 of every hundred acres on this huge watershed was in forest. Today there are forests on only 37 of each 100 acres of land in the Ohio valley. Also, most of the forests are in poor condition from burning, cutting, and grazing. The forests that are left don't soak up as much rainwater as they used to.

EISENHOWER:

If they were properly managed, would the forests help control floods?

SILCOX:

Yes, No question of it. Experience has proved that.

EISENHOWER:

Suppose you tell us about some of those experiences.

SILCOX:

All right. Here's one from southern California. There the Pickens and San Dimas mountain canyons open into fertile valleys. In 1933 a bad

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fire broke out in Pickens canyon, and burned the cover from 5,000 acres. Late in December a heavy storm struck both watersheds alike. New Year's Day, 1934, a flood swept out of Pickens Canyon and destroyed 200 homes and killed 34 persons. There was no flood from San Dimas Canyon, where the forest cover was intact. San Dimas waters ran clear.

EISENHOWER:

Good evidence that forest cover will help hold rainwater. Hugh Bennett has been telling this audience for years that grass will do the same thing. Any examples from the Ohio watershed, Mr. Bennett?

BENNETT:

Yes, Milton. I've had some information by wire from our erosion experiment station at Zanesville, Ohio. The men there reported after the latest series of rains, the January rains, that 95 percent of all the rainfall ran off cultivated land of average slope. It carried a heavy load of soil with it. Only 25 percent of the rainfall ran off a grass slope of the same declivity. Grass land held many times as much water as corn land during the recent rains.

EISENHOWER:

Hugh, you and Sil make a strong case for trees and grass. But we can't put all of our land in trees and grass. We must have land to grow corn, potatoes, cotton -- dozens of row crops.

BENNETT:

Of course. But men can farm so as to make the best use of grass and other close-growing crops to control erosion and help control floods. The aim of all practices for the control of water erosion is to slow the speed of run-off, and give the water time to penetrate into the soil. Water that washes over the surface and runs off quickly into the streams is the water that carries away soil. Water that percolates into the soil comes to the streams slowly through the substrata of soil and rock. Sil here can confirm this from the studies of his associates.

SILCOX:

Decidedly. The soil is the greatest of all water reservoirs. Streams in forests are largely spring fed. There is practically no erosion in forests where the under cover hasn't been disturbed by grazing or fire. The streams run clear, and they don't go on a rampage in the spring and then dry up in the summer.

BENNETT:

Then they're not like the South Tiger River in South Carolina. The Geological Survey has a gage on that river. One June evening water was flowing through the gaging station at a rate of 155 cubic feet per second. It rained, and by midnight the flow was 3,720 cubic feet per second. Within 4 hours, the flow of water had increased 24-fold, yet in another 18 hours the stream had returned to almost normal height. This happened in 1933 when 80 percent of the watershed of the South Tiger, according to our survey records, was planted to cotton and corn.

EISENHOWER:

I know both of you men have suggestions to offer for flood control.

Sil, what would you do by way of reforestation or by way of forest improvement, in critical flood areas?

SILCOX:

Before we go into that, Milton, I think it should be fully understood that there is no overnight, patent-medicine remedy to prevent floods. Unless and until there is some radical change in climate, we'll have floods. Hugh Bennett and I are only suggesting that proper land use will reduce the height and strength of floods. It won't do away with the flood hazard.

BENNETT:

Also, Milton, we should have it understood that soil and water conservation upstream will not enable us to do away with levees and dikes and dams downstream. But as we see it, upstream conservation would lessen the load on downstream levees, dams and dikes. It would also help to keep sand and silt from clogging stream channels and reservoirs.

EISENHOWER:

I am glad you gave us those comments. They will help to avoid misunderstanding. But to get back to my question, Sil. What upstream forestry measures will be helpful?

SILCOX:

In my opinion, Milton, two steps are essential. First, buy up forest and potential forest lands for public management in critical watershed areas. The nation has taken steps in this direction, but we need to proceed faster. In the Ohio River area, for example, only 2,944,000 acres are in National Forests, although the Forest Reservation Commission, has established in the area National Forest Purchase Units, comprising about 12 million acres.

My second recommendation is this: That private landowners and the government, cooperate to reforest denuded areas and manage wisely the established private forests and farm woodlots by harvesting them, as other crops are harvested, instead of ruining them.

EISENHOWER:

I see, Sil. You recommend extension of the National Forest System and extension of the federal-aid program with private owners of forests. Now, Hugh, there are some 350 million acres of cultivated land and almost a billion acres of range and pasture land in this country. As a specialist in soil and water conservation, what would you suggest for these lands?

BENNETT:

That's rather a large order, Milton, to deliver in a minute or so. The first point I want to make is this: Soil erosion and floods are closely related. Destructive erosion starts because water runs off faster when you remove the natural cover of vegetation and then cultivate the land. As the water carries away absorptive top-soil and exposes clay subsoil that won't soak up much water, the water runs off still faster and cuts still deeper. Gullies form. Soon these gullies, thousands of them, millions of them, concentrate the water that falls on the fields and discharge it immediately and with great velocity into the nearest stream. As a result, our natural waterways, from the smallest streams to the largest rivers, are now called

upon almost immediately after every heavy rain to take care of an enormously increased amount of water rushing from millions of acres of eroded land.

Hence, I suggest that we take steps to face the flood control problem not only downstream, but upstream on the watersheds of the small tributaries, the points where floods really come from. That means a complete soil and water conservation program for the drainage basin, each forest, each farm, each field, applying the practical measures that best fit the conditions of soil, slope, degree of erosion, and rainfall, on each acre.

EISENHOWER:
In other words, you two men are suggesting conservation -- planned management and use of land and all its forest, grass, and other vegetative cover -- as a means to help protect human lives and property values against floods and erosion. Is that it?

BENNETT:
In a nut shell, that's it, Milton. As a matter of fact, this has been a definite part of the flood control program in most countries for years.

EISENHOWER:
And now it's one of the measures contemplated by the Omnibus Flood Control Bill which was passed last year by the 74th Congress.

SALISBURY:
Perhaps you gentlemen will return to tell us what work has been started under the authority of that Act. And I wonder if, to conclude today's inquiry, one of you won't sum up your recommendations.

EISENHOWER:
We'll nominate Mr. Silcox to do that.

SILCOX:
All right. We recommend, as an aid in flood control:

Putting land unfit for cultivation in trees or grass.
Protecting forests.
Preventing overgrazing.
Protecting tilled land by strip cropping, contour cultivation, terracing and other adaptable measures for holding soil and water.

If and when privately owned and publicly owned lands -- all lands irrespective of ownership -- on the watersheds where floods start are so managed, we shall:

First, save the soil for productive use.
Second, do away with periodical minor floods.
Third, reduce the crests of the major floods.
Fourth, reduce greatly the sedimentation of reservoirs. This will also help control floods.
Fifth, minimize the silting of stream channels. This will also help in flood control.

SALISBURY:
A clear summary, Mr. Silcox. Farm and Home listeners, you have heard Mr. F. A. Silcox, chief of the Forest Service; Mr. Hugh Bennett, chief of the Soil Conservation Service; and Mr. Milton Eisenhower, director of Information for th United States Department of Agriculture. They have reported on proper use of th land as an aid in flood control. #####